SQL-Interview Questions

1. **What is DBMS?**

   A Database Management System (DBMS) is a program that controls creation, maintenance and use of a database. DBMS can be termed as File Manager that manages data in a database rather than saving it in file systems.

2. **What is RDBMS?**

   RDBMS stands for Relational Database Management System. RDBMS store the data into the collection of tables, which is related by common fields between the columns of the table. It also provides relational operators to manipulate the data stored into the tables.

   Example: SQL Server.

3. **What is SQL?**

   SQL stands for Structured Query Language , and it is used to communicate with the Database. This is a standard language used to perform tasks such as retrieval, updation, insertion and deletion of data from a database.

   Standard SQL Commands are Select.

4. **What is a Database?**

   Database is nothing but an organized form of data for easy access, storing, retrieval and managing of data. This is also known as structured form of data which can be accessed in many ways.

   Example: School Management Database, Bank Management Database.

5. **What are tables and Fields?**

   A table is a set of data that are organized in a model with Columns and Rows. Columns can be categorized as vertical, and Rows are horizontal. A table has specified number of column called fields but can have any number of rows which is called record.

   Example:.

   Table: Employee.

   Field: Emp ID, Emp Name, Date of Birth.

   Data: 201456, David, 11/15/1960.

6. **What is a primary key?**

   A primary key is a combination of fields which uniquely specify a row. This is a special kind of unique key, and it has implicit NOT NULL constraint. It means, Primary key values cannot be NULL.

7. **What is a unique key?**

A Unique key constraint uniquely identified each record in the database. This provides uniqueness for the column or set of columns.

A Primary key constraint has automatic unique constraint defined on it. But not, in the case of Unique Key.

There can be many unique constraint defined per table, but only one Primary key constraint defined per table.

8. What is a foreign key?

A foreign key is one table which can be related to the primary key of another table. Relationship needs to be created between two tables by referencing foreign key with the primary key of another table.

9. What is a join?

This is a keyword used to query data from more tables based on the relationship between the fields of the tables. Keys play a major role when JOINs are used.

10. What are the types of join and explain each?

There are various types of join which can be used to retrieve data and it depends on the relationship between tables.

- Inner Join.

  Inner join return rows when there is at least one match of rows between the tables.

- Right Join.

  Right join return rows which are common between the tables and all rows of Right hand side table. Simply, it returns all the rows from the right hand side table even though there are no matches in the left hand side table.

- Left Join.

  Left join return rows which are common between the tables and all rows of Left hand side table. Simply, it returns all the rows from Left hand side table even though there are no matches in the Right hand side table.

- Full Join.

  Full join return rows when there are matching rows in any one of the tables. This means, it returns all the rows from the left hand side table and all the rows from the right hand side table.

11. What is normalization?

Normalization is the process of minimizing redundancy and dependency by organizing fields and table of a database. The main aim of Normalization is to add, delete or modify field that can be made in a single table.

What is Denormalization.

DeNormalization is a technique used to access the data from higher to lower normal forms of database. It is also process of introducing redundancy into a table by incorporating data from the related tables.

12. What is a Cursor?

A database Cursor is a control which enables traversal over the rows or records in the table. This can be viewed as a pointer to one row in a set of rows. Cursor is very much useful for traversing such as retrieval, addition and removal of database records.

13. What is a relationship and what are they?

Database Relationship is defined as the connection between the tables in a database. There are various data basing relationships, and they are as follows:.

- One to One Relationship.
- One to Many Relationship.
- Many to One Relationship.
- Self-Referencing Relationship.

14. What is a query?

A DB query is a code written in order to get the information back from the database. Query can be designed in such a way that it matched with our expectation of the result set. Simply, a question to the Database.

15. What is subquery?

A subquery is a query within another query. The outer query is called as main query, and inner query is called subquery. SubQuery is always executed first, and the result of subquery is passed on to the main query.

16. What are the types of subquery?

There are two types of subquery – Correlated and Non-Correlated.

A correlated subquery cannot be considered as independent query, but it can refer the column in a table listed in the FROM the list of the main query.

A Non-Correlated sub query can be considered as independent query and the output of subquery are substituted in the main query.

17. What is a stored procedure?

Stored Procedure is a function consists of many SQL statement to access the database system. Several SQL statements are consolidated into a stored procedure and execute them whenever and wherever required.

18. What is a trigger?

A DB trigger is a code or programs that automatically execute with response to some event on a table or view in a database. Mainly, trigger helps to maintain the integrity of the database.

Example: When a new student is added to the student database, new records should be created in the related tables like Exam, Score and Attendance tables.

19. What is the difference between DELETE and TRUNCATE commands?

DELETE command is used to remove rows from the table, and WHERE clause can be used for conditional set of parameters. Commit and Rollback can be performed after delete statement.

TRUNCATE removes all rows from the table. Truncate operation cannot be rolled back.

20. What are local and global variables and their differences?

Local variables are the variables which can be used or exist inside the function. They are not known to the other functions and those variables cannot be referred or used. Variables can be created whenever that function is called.

Global variables are the variables which can be used or exist throughout the program. Same variable declared in global cannot be used in functions. Global variables cannot be created whenever that function is called.

21. What is a constraint?

Constraint can be used to specify the limit on the data type of table. Constraint can be specified while creating or altering the table statement. Sample of constraint are.

- NOT NULL.
- CHECK.
- DEFAULT.
- UNIQUE.
- PRIMARY KEY.
- FOREIGN KEY.

22. What is data Integrity?

Data Integrity defines the accuracy and consistency of data stored in a database. It can also define integrity constraints to enforce business rules on the data when it is entered into the application or database.

23. What is Auto Increment?

Auto increment keyword allows the user to create a unique number to be generated when a new record is inserted into the table. AUTO INCREMENT keyword can be used in Oracle and IDENTITY keyword can be used in SQL SERVER.

Mostly this keyword can be used whenever PRIMARY KEY is used.

24. What is the difference between Cluster and Non-Cluster Index?

Clustered index is used for easy retrieval of data from the database by altering the way that the records are stored. Database sorts out rows by the column which is set to be clustered index.

A nonclustered index does not alter the way it was stored but creates a complete separate object within the table. It point back to the original table rows after searching.

25. What is Datawarehouse?

Datawarehouse is a central repository of data from multiple sources of information. Those data are consolidated, transformed and made available for the mining and online processing.

Warehouse data have a subset of data called Data Marts.

26. What is Self-Join?

Self-join is set to be query used to compare to itself. This is used to compare values in a column with other values in the same column in the same table. ALIAS ES can be used for the same table comparison.

27. What is Cross-Join?

Cross join defines as Cartesian product where number of rows in the first table multiplied by number of rows in the second table. If suppose, WHERE clause is used in cross join then the query will work like an INNER JOIN.

28. What is Online Transaction Processing (OLTP)?

Online Transaction Processing (OLTP) manages transaction based applications which can be used for data entry, data retrieval and data processing. OLTP makes data management simple and efficient. Unlike OLAP systems goal of OLTP systems is serving real-time transactions.

Example – Bank Transactions on a daily basis.

29. What is CLAUSE?

SQL clause is defined to limit the result set by providing condition to the query. This usually filters some rows from the whole set of records.

Example – Query that has WHERE condition

Query that has HAVING condition.

30. What is recursive stored procedure?

A stored procedure which calls by itself until it reaches some boundary condition. This recursive function or procedure helps programmers to use the same set of code any number of times.

31. What is Union, minus and Interact commands?

UNION operator is used to combine the results of two tables, and it eliminates duplicate rows from the tables.

MINUS operator is used to return rows from the first query but not from the second query. Matching records of first and second query and other rows from the first query will be displayed as a result set.

INTERSECT operator is used to return rows returned by both the queries.

32. What is an ALIAS command?

ALIAS name can be given to a table or column. This alias name can be referred in WHERE clause to identify the table or column.

33. What is a Data Definition Language?

Data definition language (DDL) is the subset of the database which defines the data structure of the database in the initial stage when the database is about to be created. It consists of the following commands: CREATE, ALTER and DELETE database objects such as schema, tables, view, sequence, etc.

34. What is Data Control Language?

Data control language allows you to control access to the database. DCL is the only subset of the database which decides that what part of the database should be accessed by which user at what point of time. It includes two commands GRANT and REVOKE.

GRANT: to grant the specific user to perform a particular task

REVOKE: to cancel previously denied or granted permissions.

35. What is a Data Manipulation Language?

Data manipulation language makes the user able to retrieve and manipulate data. It is used to perform the following operations.

- Insert data into database through INSERT command.
- Retrieve data from the database through SELECT command.
- Update data in the database through UPDATE command.
- Delete data from the database through DELETE command

36. What is ACID property in a database?

ACID property is used to ensure that the data transactions are processed reliably in a database system.

A single logical operation of a data is called transaction.

ACID is an acronym for Atomicity, Consistency, Isolation, Durability.

Atomicity: it requires that each transaction is all or nothing. It means if one part of the transaction fails, the entire transaction fails and the database state is left unchanged.

Consistency: the consistency property ensure that the data must meet all validation rules. In simple words you can say that your transaction never leaves your database without completing its state.

Isolation: this property ensure that the concurrent property of execution should not be met. The main goal of providing isolation is concurrency control.

Durability: durability simply means that once a transaction has been committed, it will remain so, come what may even power loss, crashes or errors.

37. What is the usage of SQL functions?

Functions are the measured values and cannot create permanent environment changes to SQL server. SQL functions are used for the following purpose:

- To perform calculations on data
- To modify individual data items
- To manipulate the output
- To format dates and numbers
- To convert data types

38. What do you understand by case manipulation functions?

Case manipulation functions are the functions which convert the data from the state in which it is already stored in the table to upper, lower or mixed case.

Case manipulation function can be used in almost every part of the SQL statement.

Case manipulation functions are mostly used when you need to search for data, and you don't have any idea that the data you are looking for is in lower case or upper case.

39. Which are the different case manipulation functions in SQL?

There are three case manipulation functions in SQL:

LOWER: converts character into Lowercase.

UPPER: converts character into uppercase.

INITCAP: converts character values to uppercase for the initials of each word.

40. Explain character-manipulation functions?

Character-manipulation functions are used to change, extract, alter the character string.

One or more than one characters and words should be passed into the function, and then the function will perform its operation on those words.

41. Which are the different character-manipulation functions in SQL?

CONCAT: join two or more values together.

SUBSTR: used to extract the string of specific length.

LENGTH: return the length of the string in numerical value.

INSTR: find the exact numeric position of a specified character.

LPAD: padding of the left-side character value for right-justified value.

RPAD: padding of right-side character value for left-justified value.

TRIM: remove all the defined character from the beginning, end or both beginning and end.

REPLACE: replace a specific sequence of character with other sequences of character.

42. What is the usage of NVL() function?

The NVL() function is used to convert NULL value to the other value. NVL() function is used in Oracle it is not in SQL and MySQL server.

Instead of NVL() function MySQL have IFNULL() and SQL Server have ISNULL() function.

43. What are the differences between SQL and PL/SQL?

Ans: Some common differences between SQL and PL/SQL are as shown below:

SQL	PL/SQL
SQL is a query execution or commanding language	PL/SQL is a complete programming language
SQL is data oriented language	PL/SQL is a procedural language
SQL is very declarative in nature	PL/SQL has a procedural nature
It is used for manipulating data	It is used for creating applications
We can execute one statement at a time in SQL	We can execute block of statements in PL/SQL
SQL tells database, what to do?	PL/SQL tells database how to do
We can embed SQL in PL/SQL	We can not embed PL/SQL in SQL

44. Write an SQL query to find names of employee start with 'A'?

The LIKE operator of SQL is used for this purpose. It is used to fetch filtered data by searching for a particular pattern in where clause.

The Syntax for using LIKE is:

SELECT column1,column2 FROM table_name WHERE column_name LIKE pattern;

LIKE: operator name

pattern: exact value extracted from the pattern to get related data in result set

45. What is the difference between CHAR and VARCHAR2 datatype in SQL?

Ans: Both of these datatypes are used for characters but varchar2 is used for character strings of variable length whereas char is used for character strings of fixed length. For example, if we specify the type as char(5) then we will not be allowed to store string of any other length in this variable but if we specify the type of this variable as varchar2(5) then we will be allowed to store strings of variable length, we can store a string of length 3 or 4 or 2 in this variable.

46. What do you mean by foreign key?

A Foreign key is a field which can uniquely identify each row in another table. And this constraint is used to specify a field as Foreign key. That is, this field points to primary key of another table. This usually creates a kind of link between the two tables.

47. What are the popular Database Management Systems in the IT Industry?

Ans: Oracle, MySQL, Microsoft SQL Server, PostgreSQL, Sybase, MongoDB, DB2, and Microsoft Access etc.,

48. What is the difference between Union and Union All command?

Ans: This is one of the tricky SQL Interview Questions. Interviewer may ask you this question in another way as what are the advantages of Union All over Union.Both Union and Union All concatenate the result of two tables but the way these two queries handle duplicates are different.

Union: It omits duplicate records and returns only distinct result set of two or more select statements.

Union All: It returns all the rows including duplicates in the result set of different select statements.

Performance wise Union All is faster than Union, Since Union All doesn't remove duplicates. Union query checks the duplicate values which consumes some time to remove the duplicate records.

49. What is the difference between Having and Where clause?

Ans: Where clause is used to fetch data from a database that specifies particular criteria whereas a

Having clause is used along with 'GROUP BY' to fetch data that meets particular criteria specified by the Aggregate functions. Where clause cannot be used with Aggregate functions, but the Having clause can.

50. What are aggregate functions in SQL?

Ans: SQL aggregate functions return a single value, calculated from values in a column. Some of the aggregate functions in SQL are as follows

AVG() – This function returns the average value

COUNT() – This function returns the number of rows

MAX() – This function returns the largest value

MIN() – This function returns the smallest value

ROUND() – This function rounds a numeric field to the number of decimals specified

SUM() – This function returns the Sum

51. What is the difference between TRUNCATE and DROP statements?

TRUNCATE removes all the rows from the table, and it cannot be rolled back. DROP command removes a table from the database and operation cannot be rolled back.

How can you create an empty table from an existing table?

Example will be -.

Select * into studentcopy from student where 1=2

Here, we are copying student table to another table with the same structure with no rows copied.

52. How to fetch common records from two tables?

Common records result set can be achieved by -.

Select studentID from student

intersect

select studentID from Exam

53. How to fetch alternate records from a table?

Records can be fetched for both Odd and Even row numbers -.

To display even numbers-.

Select studentID from (select rowno, studentID from student) where mod(rowno,2)=0

To display odd numbers-.

Select studentID from (select rowno, studentID from student) where mod(rowno,2)=1

54. How to select unique records from a table?

Select unique records from a table by using DISTINCT keyword.

Select distinct StudentID, StudentName from Student

55. What is the command used to fetch first 5 characters of the string?

By below query we can fetch first 5 characters of the string -.

Select substrinhg(styudentName,1,5) as StudentName from student.

56. Which operator is used in query for pattern matching?

LIKE operator is used for pattern matching, and it can be used as -.

% - Matches zero or more characters.

_(Underscore) – Matching exactly one character.

Example -.

Select * from Student where studentName like 'a%'

Select * from Student where studentName like 'ami_'

57. What is user defined functions?

User defined functions are the functions written to use that logic whenever required. It is not necessary to write the same logic several times. Instead, function can be called or executed whenever needed.

58. What is an Index?

An index is performance tuning method of allowing faster retrieval of records from the table. An index creates an entry for each value and it will be faster to retrieve data.

59. What are all the different types of indexes?

There are three types of indexes -.

Unique Index.

This indexing does not allow the field to have duplicate values if the column is unique indexed. Unique index can be applied automatically when primary key is defined.

Clustered Index.

This type of index reorders the physical order of the table and search based on the key values. Each table can have only one clustered index.

NonClustered Index.

NonClustered Index does not alter the physical order of the table and maintains logical order of data. Each table can have 999 nonclustered indexes.

60. What is a View?

A view is a virtual table which consists of a subset of data contained in a table. Views are not virtually present, and it takes less space to store. View can have data of one or more tables combined, and it is depending on the relationship.

61. What are all the different normalizations?

The normal forms can be divided into 5 forms, and they are explained below

First Normal Form (1NF):.

This should remove all the duplicate columns from the table. Creation of tables for the related data and identification of unique columns.

Second Normal Form (2NF):.

Meeting all requirements of the first normal form. Placing the subsets of data in separate tables and Creation of relationships between the tables using primary keys.

Third Normal Form (3NF):.

This should meet all requirements of 2NF. Removing the columns which are not dependent on primary key constraints.

Fourth Normal Form (4NF):.

Meeting all the requirements of third normal form and it should not have multi- valued dependencies.

62. What is RDBMS? How is it different from DBMS?

RDBMS stands for Relational Database Management System. The key difference here, compared to DBMS, is that RDBMS stores data in the form of a collection of tables and relations can be defined between the common fields of these tables. Most modern database management systems like MySQL, Microsoft SQL Server, Oracle, IBM DB2 and Amazon Redshift are based on RDBMS.

63. What is the difference between SQL and MySQL?

SQL is a standard language for retrieving and manipulating structured databases. On the contrary, MySQL is a relational database management system, like SQL Server, Oracle or IBM DB2, that is used to manage SQL databases.

What are some common clauses used with SELECT query in SQL?

Some common SQL clauses used in conjuction with a SELECT query are as follows:

WHERE clause in SQL is used to filter records that are necessary, based on specific conditions.

ORDER BY clause in SQL is used to sort the records based on some field(s) in ascending (ASC) or descending order (DESC).

```
SELECT *
FROM myDB.students
WHERE graduation_year = 2019
ORDER BY studentID DESC;
```

GROUP BY clause in SQL is used to group records with identical data and can be used in conjuction with some aggregation functions to produce summarized results from the database.

HAVING clause in SQL is used to filter records in combination with the GROUP BY clause. It is different from WHERE, since WHERE clause cannot filter aggregated records.

```
SELECT COUNT(studentId), country
FROM myDB.students
WHERE country != "INDIA"
GROUP BY country
HAVING COUNT(studentID) > 5;
```

64. What are UNION, MINUS and INTERSECT commands?

1.The UNION operator combines and returns the result-set retrieved by two or more SELECT statements.

2. The MINUS operator in SQL is used to remove duplicates from the result-set obtained by the second SELECT query from the result-set obtained by the first SELECT query and then return the filtered results from the first.

3. The INTERSECT clause in SQL combines the result-set fetched by the two SELECT statements where records from one match the other and then returns this intersection of result-sets.

Certain conditions need to be met before executing either of the above statements in SQL -

Each SELECT statement within the clause must have the same number of columns

The columns must also have similar data types

The columns in each SELECT statement should necessarily have the same order

```
SELECT name FROM Students        /* Fetch the union of queries */
UNION
SELECT name FROM Contacts;
SELECT name FROM Students          /* Fetch the union of queries with duplicates*/
    UNION ALL
   SELECT name FROM Contacts;
SELECT name FROM Students          /* Fetch names from students*/
MINUS                             /* that aren't present in contacts */
SELECT name FROM Contacts;
SELECT name FROM Students          /* Fetch names from students*/
INTERSECT               /* that are present in contacts as well */
SELECT name FROM Contacts;
```

65. What are Entities and Relationships?

Entity: An entity can be a real-world object, either tangible or intangible, that can be easily identifiable. For example, in a college database, students, professors, workers, departments, and projects can be referred to as entities. Each entity has some associated properties that provide it an identity.

Relationships: Relations or links between entities that have something to do with each other. For example - The employees table in a company's database can be associated with the salary table in the same database.

66. What are the TRUNCATE, DELETE and DROP statements?

DELETE statement is used to delete rows from a table.

```
DELETE FROM Candidates
WHERE CandidateId > 1000;
```

TRUNCATE command is used to delete all the rows from the table and free the space containing the table.

```
TRUNCATE TABLE Candidates;
```

DROP command is used to remove an object from the database. If you drop a table, all the rows in the table is deleted and the table structure is removed from the database.

```
DROP TABLE Candidates;
```

67. State the differences between HAVING and WHERE clauses.

Basis for Comparison	WHERE	HAVING
Implemented in	Row operations	Column operations
Applied to	A single row	The summarized row or groups
Used for	Fetching specific data from specific rows according to the given condition	Fetching the entire data and separating according to the given condition
Aggregate functions	Cannot have them	Can have them
Statements	Can be used with SELECT, UPDATE, and DELETE	Cannot be used without a SELECT statement
GROUP BY clause	Comes after the WHERE clause	Comes before the HAVING clause

89. Explain the different types of SQL commands.

Data Definition Language: DDL is that part of SQL which defines the data structure of the database in the initial stage when the database is about to be created. It is mainly used to create and restructure database objects. Commands in DDL are:

Create table

Alter table

Drop table

Data Manipulation Language: DML is used to manipulate the already existing data in the database. That is, it helps users retrieve and manipulate the data. It is used to perform operations like inserting data into the database through the insert command, updating the data with the update command, and deleting the data from the database through the delete command.

Data Control Language: DCL is used to control access to the data in the database. DCL commands are normally used to create objects related to user access and also to control the distribution of privileges among users. The commands that are used in DCL are Grant and Revoke.

Transaction Control Language: It is used to control the changes made by DML commands. It also authorizes the statements to assemble in conjunction into logical transactions. The commands that are used in TCL are Commit, Rollback, Savepoint, Begin, and Transaction.

90. What is a default constraint?

Constraints are used to specify some sort of rules for processing data and limiting the type of data that can go into a table. Now, let's understand the default constraint.

Default constraint: It is used to define a default value for a column so that the default value will be added to all the new records if no other value is specified. For example, if we assign a default constraint for the E_salary column in the below table and set the default value as 85000, then all the entries of this column will have a default value of 85000 unless no other value has been assigned during the insertion.

91. How would you find the second highest salary?

select max(e_salary) from employee where e_salary not in (select max(e_salary) from employee)

92. State the differences between SQL and PL/SQL.

SQL	PL/SQL
SQL is a database structured query language.	It is a programming language for a database that uses SQL.
SQL is an individual query that is used to execute DML and DDL commands.	PL/SQL is a block of codes used to write the entire procedure or a function.
SQL is a declarative and data-oriented language.	PL/SQL is a procedural and application-oriented

	language.
It is mainly used for the manipulation of data.	It is used for creating an application.
It provides interaction with the database server.	It does not provide interaction with the database server.
It cannot contain PL/SQL code in it.	It can contain SQL in it because it is an extension of SQL.

93. What is COALESCE function?

COALESCE function takes a set of inputs and returns the first non-null value.

Syntax:

COALESCE(val1,val2,val3,……,nth val)

Example:

SELECT COALESCE(NULL, 1, 2, 'MYSQL')

Output:

1

94. State the differences between Views and Tables.

Views	Tables
It is a virtual table that is extracted from a database.	A table is structured with a set number of columns and a boundless number of rows.
Views do not hold data themselves.	Table contains data and stores the data in databases.
A view is also utilized to query certain information contained in a few distinct tables.	A table holds fundamental client information and the cases of a characterized object.
In a view, we will get frequently queried information.	In a table, changing the information in the database changes the information that appears in the view

95. What is the difference between Union and Union All operators?

The Union operator is used to combine the result set of two or more select statements. For example, the first select statement returns the fish shown in Image A, and the second returns the fish shown in Image B. Then, the Union operator will return the result of the two select statements as shown in Image A U B. Also, if there is a record present in both tables, then we will get only one of them in the final result.

96. What is the use of the Intersect operator?

The Intersect operator helps combine two select statements and returns only those records that are common to both the select statements. So, after we get Table A and Table B over here and if we apply the Intersect operator on these two tables, then we will get only those records that are common to the result of the select statements of these two.

97. What is the difference between CHAR and VARCHAR2 datatype in SQL?

Both Char and Varchar2 are used for characters datatype but varchar2 is used for character strings of variable length whereas Char is used for strings of fixed length. For example, char(10) can only store 10 characters and will not be able to store a string of any other length whereas varchar2(10) can store any length i.e 6,8,2 in this variable.

98. Write a SQL query to display the current date?

In SQL, there is a built-in function called GetDate() which helps to return the current timestamp/date.

What are the different operators available in SQL?

There are three operators available in SQL, namely:

Arithmetic Operators

Logical Operators

Comparison Operators

99. Are NULL values same as that of zero or a blank space?

A NULL value is not at all same as that of zero or a blank space. NULL value represents a value which is unavailable, unknown, assigned or not applicable whereas a zero is a number and blank space is a character.

100. What is the difference between cross join and natural join?

The cross join produces the cross product or Cartesian product of two tables whereas the natural join is based on all the columns having the same name and data types in both the tables.

List the ways to get the count of records in a table?

To count the number of records in a table, you can use the below commands:

```
SELECT * FROM table1
SELECT COUNT(*) FROM table1
SELECT rows FROM sysindexes WHERE id = OBJECT_ID(table1) AND indid < 2
```

What is the need for group functions in SQL?

Group functions work on the set of rows and returns one result per group. Some of the commonly used group functions are: AVG, COUNT, MAX, MIN, SUM, VARIANCE.

101. How can you insert NULL values in a column while inserting the data?

NULL values can be inserted in the following ways:

Implicitly by omitting column from column list.

Explicitly by specifying NULL keyword in the VALUES clause

is the main difference between 'BETWEEN' and 'IN' condition operators?

BETWEEN operator is used to display rows based on a range of values in a row whereas the IN condition operator is used to check for values contained in a specific set of values.

Example of BETWEEN:

SELECT * FROM Students where ROLL_NO BETWEEN 10 AND 50;

Example of IN:

SELECT * FROM students where ROLL_NO IN (8,15,25);

102. Why are SQL functions used?

SQL functions are used for the following purposes:

To perform some calculations on the data

To modify individual data items

To manipulate the output

To format dates and numbers

To convert the data types

103. What is the need of MERGE statement?

This statement allows conditional update or insertion of data into a table. It performs an UPDATE if a row exists, or an INSERT if the row does not exist.

104. What are the various levels of constraints?

Constraints are the representation of a column to enforce data entity and consistency. There are two levels of a constraint, namely:

column level constraint

table level constraint

105. What are the different set operators available in SQL?

Some of the available set operators are – Union, Intersect or Minus operators.

106. What are Views used for?

A view refers to a logical snapshot based on a table or another view. It is used for the following reasons:

Restricting access to data.

Making complex queries simple.

Ensuring data independence.

Providing different views of same data.

107. List some advantages and disadvantages of Stored Procedure?

Advantages:

A Stored Procedure can be used as a modular programming which means create once, store and call for several times whenever it is required. This supports faster execution. It also reduces network traffic and provides better security to the data.

Disadvantage:

The only disadvantage of Stored Procedure is that it can be executed only in the database and utilizes more memory in the database server.

108. What are the usages of SQL?

SQL is responsible for maintaining the relational data and the data structures present in the database.

To execute queries against a database

To retrieve data from a database

To inserts records in a database

To updates records in a database

To delete records from a database

To create new databases

To create new tables in a database

To create views in a database

To perform complex operations on the database.

109. Does SQL support programming?

SQL refers to the Standard Query Language, which is not actually the programming language. SQL doesn't have a loop, Conditional statement, logical operations, it can not be used for anything other than data manipulation. It is used like commanding (Query) language to access databases. The primary purpose of SQL is to retrieve, manipulate, update and perform complex operations like joins on the data present in the database.

110. What are the different types of database management systems?

There are four types of database:

Hierarchical databases (DBMS)

Relational databases (RDBMS)

Network databases (IDMS)

Object-oriented databases

RDBMS is one of the most often used databases due to its easy accessibility and supports regarding complex queries.

111. What is the primary use of Normalization?

Normalization is mainly used to add, delete or modify a field that can be made in a single table. The primary use of Normalization is to remove redundancy and to remove the insert, delete and update distractions. Normalization breaks the table into small partitions and then link them using different relationships so that it will avoid the chances of redundancy.

112. What are the disadvantages of not performing Database Normalization?

The major disadvantages are:

The occurrence of redundant terms in the database which causes the waste of the space in the disk.

Due to redundant terms inconsistency may also occur id any change will be made in the data of one table but not made in the same data of another table then inconsistency will take place, which will lead to the maintenance problem and effects the ACID properties as well.

113. What is an inconsistent dependency?

Inconsistent dependency refers to the difficulty of accessing particular data as the path to reach the data may be missing or broken. Inconsistent dependency will leads users to search the data in the wrong table which will afterward give the error as an output.

114. What is the difference between SQL, MySQL and SQL Server?

SQL or Structured Query Language is a language which is used to communicate with a relational database. It provides a way to manipulate and create databases. On the other hand, MySQL and Microsoft's SQL Server both are relational database management systems that use SQL as their standard relational database language.

MySQL is available for free as it is open source whereas SQL server is not an open source software.

115. Is it possible to sort a column using a column alias?

Yes. You can use the column alias in the ORDER BY instead of WHERE clause for sorting.

116. Which are the most commonly used SQL joins?

Most commonly used SQL joins are INNER JOIN and LEFT OUTER JOIN and RIGHT OUTER JOIN.

117. Which function is used to return remainder in a division operator in SQL?

The MOD function returns the remainder in a division operation.